

NEWEST NOTES OF SCIENCE

The best beet root yields about 12 per cent of sugar.

Children brought upon goats' milk are said to be immune from tuberculosis.

A force that will move a ton along a highway will pull a 22-ton canal boat.

No receptacle has ever been made strong enough to resist the freezing power of water.

At the present rate of increase the population of the United States in 1919 will be 100,000,000.

At a cost of \$200,000 a fog horn has been erected on precipitous Bass Rock, in the Firth of Forth.

The highest telephone station in the world will soon be in operation 15,217 feet up on Mount Rosa, in Italy.

The deepest hole in the world, in Silesia, has reached a depth of 7,600 feet, penetrating 83 strata of coal.

Nitrate of soda, alkali of ammonia and cotton seed are the three fertilizers most rich in nitrogen.

Cotton mittens, much used by women when handling plants, can be water-proofed by dipping them in melted paraffine.

Stockholm, Christiania, Berlin and London, in the order named, have the lowest death rates among the European cities.

The average cost for fuel for a railroad train is 10 cents a mile, and the average fireman burns \$2,500 worth a year.

The Argentine ant, which has wrought havoc with the Louisiana sugar plantations, has now appeared on the Pacific coast.

A pint of crude carbolic acid mixed with a gallon of kerosene makes a cheap and excellent spray for poultry houses.

In round numbers 2,500,000 ounces of gold and 60,000,000 ounces of silver are produced in the United States each year.

A Pittsburg man has invented a machine by which he claims from 1,000 pounds to a ton of coal can be mined and loaded into a car in a minute.

A monument will be erected near Titusville, Fla., in honor of the man who drilled the first oil well there fifty years ago next August.

Germany's first electric ferryboat recently was launched at Duisburg. It has a capacity for 65 passengers, besides horses and vehicles.

British inventors have succeeded in hardening tantalum by an oxygen process, which adds to its strength without adding to its brittleness.

By a vote of 248 to 217 the members of the Royal Geographical society of England favored the admission of women to membership recently.

A company of 100 picked soldiers from the German army recently in minutes built a bridge of steel boats and plates 108 feet long by 10 wide.

A single London gas company lost by leakage last year enough gas to fill 200 balloons such as Count Zeppelin used in his recent record-breaking flight.

The tobacco leaf normally contains considerable quantities of citric and malic acid, the former the acid of the lemon and the latter the acid of the apple.

The nation's production of abrasive garnet in 1907, 7,658 short tons, was the greatest on record, exceeding the previous year's production by 10 per cent.

In the manufacture of coke in this country last year scarcely more than an eighth was made in retort ovens, so that the by-products could be recovered.

The construction of a canal for large barges between Stettin and Berlin has been begun by the German government. It is planned to have it completed by 1913.

All the domestic pumice marketed in the United States comes from Harlan and Lincoln counties, Nebraska, though several other western states have deposits.

The world-famous Straker collection of butterflies and moths, including nearly 100,000 specimens, has been purchased by the Field Museum of Natural History at Chicago.

In the government tests of tobacco a mechanical smoker is used which draws the smoke through flasks of sulphuric acid to absorb the nicotine, which may then be measured.

Two German scientists have had remarkable success in the prevention of bacterial diseases by the use of a liquid prepared by the addition of caustic soda to Javelle water.

The German Academy of Science at Berlin will receive 20,000,000 marks (about \$7,000,000) under the will of Herr Samson, the Berlin banker who died at Brussels recently.

A Danish explorer who has returned from two years spent in the north of Alaska has reported the discovery of mountains heretofore unknown, from 10,000 to 12,000 feet high.

A pair of French army dogs have drawn light ambulances with loads of 180 pounds each for 50 miles without a breakdown, showing their availability for such purposes in time of war.

A Brooklyn man has secured a patent on a spiked driving wheel and runners to replace the ordinary wheels to convert an automobile into a motor-cycle.

Why pay rent for an ordinary cottage when you can own an artistic bungalow and pay for it monthly the same as rent? If you own a lot we will build, design and finance the entire transaction and you can pay for it monthly instead of paying rent. We will build for you on our own lot on easy payments. Think how many homes you have prevented to your landlord. Now is the time. Declare your independence. Own your home.

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driven sleigh when snow is on the ground.

The marble output of the United States in 1907 was valued at \$7,837,685, a slight gain over the preceding year.

Vermont, New York and Georgia led in the order named.

Of three wires of the same size, made respectively of gold, copper and iron, the first will sustain a weight of 150 pounds, the second a load of 302 pounds and the third one of 549 pounds.

Camille Flammarion, the French astronomer, is of the opinion that a dark spot on the planet Jupiter, which changes its position, is an island of Scoria, floating about on the molten surface.

By kneading together ten parts of finely sifted unoxidized iron filings with five parts of dry pulverized clay in vinegar spirit, a cement is formed that will establish baths there so that sufferers from certain diseases may obtain relief.

Experiments by the Canadian government lend support to the old theory of farmers that snow is a fertilizer. It is said to yield about a pound of nitrogen for the acre per year of average snow-fall.

Prince Henry of Prussia, the Kaiser's brother, has been granted a patent on a rubber device to wipe moisture from glass windbreaks of automobiles by turning a handle from the chauffeur's seat.

A spring in an imperial radium mine at Joachimsthal contains so much radium that the Austrian government will establish baths there so that sufferers from certain diseases may obtain relief.

Experiments in Europe show that balloons traveling at heights of from 600 to 2,000 yards can be hit with a rifle only once in six times, while at an elevation of 3,000 yards they are absolutely safe.

Coal ashes are being washed in spaces in Pennsylvania mines from

which the coal has been removed. As the water recedes the former is a solid mass, strong enough to hold up the earth and prevent cave-ins.

A new flying machine invented by a Russian military engineer is said to lift weights five times greater and to carry them at higher speed than the aeroplanes of similar power owned by other European nations.

Coal mine accidents in the United States in 1907 cost 3,125 human lives, besides the injury of 5,306 more persons, an increase of 1,033 in the number of deaths and 506 in the number of injured over 1906.

The steepest railroad in the world is the Mendal, in the Tyrol, which has a gradient of 64 feet in the 100. Until this was completed recently the road up Vesuvius, with a gradient of 63 feet in 100, held the record.

Berlin's railroad stations are to be fitted with coin-in-the-slot umbrella machines. A borrower pays the value of the umbrella he gets, and is refunded nearly the whole amount on returning it to the office of the company owning the machines.

Santa Monica, Cal., claims to kill the germs of animal and vegetable life in its sewage at a cost of 50 cents a day by passing it through concrete tanks, where it is treated by strong electric currents at a low voltage.

The largest barometer in the world has been completed by Father Alfani, director of the meteorological observatory at Florence. The tube is nearly 15 meters high, but over 20 centimeters in diameter. Olive oil instead of mercury is used.

A recently patented roller skate carries a fifth wheel under the toe, slightly raised above the ground, and revolving transversely, to enable the skater to execute fancy figures and to stop suddenly when necessary.

An Englishman has patented a device to make life in submarines safer. Should a boat fail, a platform may be released which will rise to the top of the water, carrying three tubes for conveying air and liquid nourishment to the imprisoned.

The King of Diamonds

Continued from Page 1.

The letter was from Mr. Abingdon. It briefly acknowledged his telegram, stated that a man in the Athenaeum, who knew Sir Philip Morland, had informed him, in response to guarded inquiries, that the baronet was exceedingly well off, and called attention to some important losses incurred which required his signature.

The other note was from Evelyn. It was tender and loving, and contained a reference that added to the mystification of her telegram.

"In the hurry of your departure yesterday," she wrote, "we forgot to mention Blue Atom. What is your opinion? The price is high, certainly, but, then, picture the joy of it—the only one in the world!"

And, again, came another message: "I referred to Blue Atom, of course. What did the postoffice make it into?"

"EVELYN."

Blue Atom was assuming spectral dimensions. He cursed the thing fluently. It was high-priced, a joy, alone in solitary glory. What could it be?

He strolled into the station, and entered into conversation with a platform inspector.

"By the way," he said, casually, "have you ever heard of anything called a blue atom?"

The man grinned. "Is that another name for D. T. the butler?"

Grenier gave it up, and resolved to postpone a decision until the next morning.

By a late train Philip's portmanteau arrived. It was locked, and the key reposed in the safe. Green, it ultimately transpired, solemnly opened the safe in the presence of the housekeeper and butler, locked it again without disturbing any of the other contents, and placed the key to the butler, who handed it in the silver pantry.

In the solitude of his room, Grenier burst the lock. The rascal received one of the greatest shocks of his life when he examined the contents—a quantity of old clothing, some work boots, a ball of twine, a bed coverlet, a big iron key, the tattered letters, and a variety of odds and ends that would have found no corner in a respectable rag shop.

He burst into a fit of hysterical laughter.

"Ye gods and little fishes!" he cried. "What a treasure! The 'Derkenswell' suit, I suppose, and a woman's skirt and blouse. Old-timers, too, by their style. His mother's, I expect. He must have been fond of his mother."

At that moment Josky Mason, beetle-browed and resentful, was reading a letter which reached his lodgings two hours before his arrival, in an envelope bearing the ominous initials—O. H. M. S.

It was from the Southward police station.

"Sir—Kindly make it convenient to attend here tomorrow evening at 8 p. m. Yours truly,

"O. H. BRADLEY, Inspector."

The following day it was Mason's duty to report himself under his ticket-of-leave, but it was quite unusual for the police to give a preliminary warning in this respect. Failure on his part meant arrest. That was all the officials looked after.

"What's up now?" he muttered. "Anyway, Grenier was right. This gives me a cast-iron alibi. I'll acknowledge it at once."

His accomplice, hoping to obtain sleep from champagne, consumed the contents of a small bottle in his bedroom, while he scanned the columns of the local evening papers for any reference to a "Seaside Mystery" on the Yorkshire coast.

There was none. Anson's body had not been recovered yet.

Before going to bed, he wound Philip's watch. He examined it now with greater interest than he had bestowed on it hitherto.

Although silver, it appeared to be a good one. He opened the case to examine the works. Inside there was an inscription:

"Presented to Philip Anson, aged 15 years, by the officers and men of the Whitechapel division of the Metropolitan police, as a token of their admiration for his bravery in assisting to arrest a notorious burglar."

Beneath was the date of Mason's capture.

"Where was I ten years ago?" he mused.

He looked back through the soiled leaves of a sordid record, and found that he was then acting in a melodrama entitled "The Wages of Sin."

And the wages of sin is death! The drama insisted on the full measure of Biblical accuracy. Altogether, Grenier lay down to rest under unenviable conditions.

He dreamed that he was falling down precipices, and striking sheets of blue water with appalling splashes. Each time he was awakened by the shock.

But he was a hardy rogue whose conscience was concerned, and he

swore himself to sleep again. Rest he must have. He must arise with steady head and clear brain.

He was early astir. His first act was to send for the Yorkshire morning papers. They contained no news sheet chronicling his arrival at York.

This was excellent. The banker would see it. A few printed lines carry great weight in such matters.

Then he signed the leases, dispatched them in a typewritten envelope and telegraphed:

"Documents forwarded this morning. Please meet wishes expressed in letter."

"Surely," he reflected, "Abingdon will not give another thought to my proceedings. Philip Anson is not a boy in leading strings."

He wired to Evelyn:

"Sorry for misunderstanding. Blue Atom must wait until my return."

Here was a way out. Whatever that wretched speck of color meant, it could be dealt with subsequently.

But Evelyn's prompt reply only made confusion worse confounded:

"Delay is impossible. The man has put off the duchess two days already."

So a man, and a duchess, and a period of time were mixed up with a blue atom. He did something desperate; begin his plan of alienation sooner than he intended. He answered:

"Too busy to attend to matter further. Going to Leeds today. Letters here as usual."

And to Leeds he went. Residence in York was a fever—a constant fret. In Leeds he was removed from the arena. He passed the afternoon and evening in roaming the streets, consumed with a fiery desire to be doing, daring, braving difficulties.

But he must wait at least another day before he could lay hands on any portion of Philip Anson's wealth save the money stolen from his pockets.

At the hotel there was only one letter and no telegrams.

The London bankers write:

"We beg to acknowledge yours of yesterday. Your cash balance at date is twelve thousand four hundred and ten pounds nine shillings one penny. Your securities in our possession amount to a net value at today's price of about nine hundred and twenty thousand pounds, including two hundred and fifty thousand pounds Consols at par. We will forward you a detailed list if desired, and will be pleased to realize any securities as directed."

Kindly note that instructions for sale should be given in your handwriting, and not typed."

There was joy, intoxicating almost to madness, in this communication, but it was not unalloyed by the elements of danger and delay.

His signature had been accepted without demur; he could control an enormous sum without question; these were the entrancing certainties which dazzled his eyes for a time.

But it was horribly annoying that a millionaire should keep his current account so low, and the concluding paragraph held a bogey, not wholly unforeseen, but looming large when it actually presented itself.

The memorandum in Philip's handwriting on Evelyn's letter was now three precious. He hurriedly scrutinized it, and at once commenced to practice the words.

"Devonshire" and "Sharpe" gave him the capitals for "Dear Sirs." He was

When he closed his eyes he could see

at a loss for a capital "C," but he

green depths. Never before were his

hands smeared with blood. He had

touched every crime save murder.

Physically he was a coward. In plotting the attack on Philip he had taxed his ingenuity for weeks to discover some means where he need not become Mason's actual helper. He rejected project after project. The thing might be bungled, so he must attend to each part of the undertaking himself, short of using a bludgeon.

He slept again and dreamed of long flights through space pursued by demons. How he longed for day. How slowly the hours passed after dawn, until the newspapers were obtainable, with their columns of emptiness for him.

A letter came from Evelyn. It was a letter reserved, with an impulse to tears concealed in it.

"I asked mother for fifty pounds,"

she wrote, "so the Blue Atom incident has ended, but I don't think I'll ever understand the mood in which you wrote your last telegram. Perhaps your letter now in the post—I half expected it at midday—will explain matters somewhat."

He consigned Blue Atom to a sultry climate, and began to ask himself why Mr. Abingdon had not written. The magistrate's reticence annoyed him. A letter, even remonstrating with him, would be grateful. This silence was irritating; it savored of doubt, and doubt was the one phase of thought he wished to keep out of Mr. Abingdon's mind at that moment.

As for Evelyn, she mistrusted even his telegrams, while a bank had accepted his signature without reservation. He would punish her with zest. Philip Anson's memory would be poisoned in her heart long before she realized that he was dead.

With this missive committed irrevocably to the care of his majesty's mails, Victor Grenier's spirits rose. Now indeed he was in the whirlpool. Would he emerge high and dry in the El Dorado of gilded vice which he longed to enter, or would fortune consign him to Portland again—perchance to the scaffold? He could not say. He would not feel safe until Philip Anson was a myth, and Victor Grenier a reality, with many thousands in the bank.

Already he was planning plausible lies to keep Mason out of his fair share of the plunder. A few more forged letters would easily establish the fact that he was unable to obtain a bigger haul than, say, fifty thousand pounds.

And what did Mason want with twenty-five thousand pounds? He was a gambler, with crude tastes. Twenty, fifteen, ten thousand would be ample for his wants. The sooner he drank himself to death the better.

With each fresh cigar Mason's moiety shrank in dimensions. The murder was a mere affair of a venereal blow, but this steady sucking of the millionaire's riches required finesse, a dashing adroitness, the superb impudence of a Gagliostro.

But if his confederate's interests suffered, the total fixed in Grenier's original scheme in nowise became affected.

He meant to have a hundred thousand pounds, and he firmly decided not to go beyond that amount. His letter to the bankers named one hundred and fifty thousand pounds, and he calculated that by stopping short at two-thirds of the available sum he would not give any grounds for suspicion or personal inquiry.

Yet he would shirk nothing. Mr. Abingdon and Miss Atherley must be avoided at all events; others he would face blithely. He took care to have ever on the table in his sitting room a goodly supply of wines and spirits.

If any one sought an interview it might be helpful to sham a slight degree of intoxication. The difference between Philip drunk and Philip sober would then be accounted for readily.

But rest—that was denied him. It was one thing to harden himself against surprise; quite another to forget that disfigured corpse swirling about in the North sea.

He wished now that Philip Anson had not been cast forth naked. It was a blunder not to dress him, to provide him with means of identification with some unknown Smith or Jones.

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